

IN THE CLAIMS:

Please CANCEL claims 9-17 without prejudice to or disclaimer of the recited subject matter.

Please ADD new claims 18-30, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1-17. (Cancelled)

18. (New) A position detection method of detecting a position of a mark, said method comprising steps of:

detecting light from the mark under a first detecting condition to obtain a position of the mark as a first position;

detecting light from the mark under a second detecting condition different from the first detecting condition to obtain a position of the mark as a second position;

obtaining previously prepared data for relating a difference between the first and second positions to offset data for offsetting one of the first and second positions; and

detecting the position of the mark based on the first and second positions and the previously prepared data.

19. (New) A position detection method of detecting a position of a mark, said method comprising steps of:

detecting light from the mark under a first detecting condition to obtain a position of the mark as a first position;

detecting light from the mark under a second detecting condition different from the first detecting condition to obtain a position of the mark as a second position;

weighting the first and second positions with a coefficient and adding the weighted first and second positions to obtain a weighted position; and

obtaining a conversion parameter for converting designed positions of a plurality of the mark into converted positions of the plurality of the mark based on the weighted positions of the plurality of the mark,

wherein a value of the coefficient is previously obtained so as to minimize a difference of the designed positions of the plurality of the mark and converted positions obtained by converting the weighted positions of the plurality of the mark using the conversion parameter.

20. (New) A position detection method of detecting a position of a mark, said method comprising steps of:

detecting light from the mark under a first detecting condition to obtain a position of the mark as a first position;

detecting light from the mark under a second detecting condition to obtain a position of the mark as a second position; and

detecting the position of the mark by weighting the first and second positions with a coefficient and adding the weighted first and second positions,

wherein the first and second detecting conditions are different from each other in one of focus state of an image of the mark, a coherence factor of an illumination optical system for illuminating the mark, numerical aperture of an imaging optical system for imaging the mark, and polarization state of light for illuminating the mark.

21. (New) A position detection method according to Claim 18, wherein the previously prepared data is previously prepared from relation between the first and second positions and an error obtained with respect to at least one of the first and second positions.

22. (New) A position detection method according to Claim 18, wherein the previously prepared data is a coefficient to be multiplied to the difference, and one of the first and second position is offset by a product of the coefficient and the difference to detect the position of the mark.

23. (New) A position detection method according to Claim 18, wherein the first and second detecting conditions are different from each other in one of focus state of an image of the mark, a coherence factor of an illumination optical system for illuminating the mark, numerical aperture of an imaging optical system for imaging the mark, polarization state of light for illuminating the mark, and wavelength of light for illuminating the mark.

24. (New) A position detection method according to Claim 19, wherein the first and second detecting conditions are different from each other in one of focus state of an image of the mark, a coherence factor of an illumination optical system for illuminating the mark, numerical aperture of an imaging optical system for imaging the mark, polarization state of light for illuminating the mark, and wavelength of light for illuminating the mark.

25. (New) An exposure apparatus for transferring a pattern to a workpiece, said apparatus comprising:

means for detecting light from a mark on the workpiece under a first detecting condition to obtain a position of the mark as a first position;

means for detecting light from the mark under a second detecting condition different from the first detecting condition to obtain a position of the mark as a second position;

means for obtaining previously prepared data for relating a difference between the first and second positions to offset data for offsetting one of the first and second positions;

means for detecting the position of the mark based on the first and second positions and the previously prepared data; and

means for aligning the workpiece based on the position of the mark detected by said position detecting means.

26. (New) An exposure apparatus for transferring a pattern to a workpiece, said apparatus comprising:

means for detecting light from the mark under a first detecting condition to obtain a position of the mark as a first position;

means for detecting light from the mark under a second detecting condition different from the first detecting condition to obtain a position of the mark as a second position;

means for weighting the first and second positions with a coefficient and adding the weighted first and second positions to obtain a weighted position;

means for obtaining a conversion parameter for converting designed positions of a plurality of the mark into converted positions of the plurality of the mark based on the weighted positions of the plurality of the mark; and

means for aligning the workpiece based on the conversion parameter obtained by said conversion parameter obtaining means,

wherein a value of the coefficient is previously obtained so as to minimize a difference of the designed positions of the plurality of the mark and converted positions obtained by converting the weighted positions of the plurality of the mark using the conversion parameter.

27. (New) An exposure apparatus for transferring a pattern to a workpiece, said apparatus comprising:

means for detecting light from the mark under a first detecting condition to obtain a position of the mark as a first position;

means for detecting light from the mark under a second detecting condition to obtain a position of the mark as a second position;

means for detecting the position of the mark by weighting the first and second positions with a coefficient and adding the weighted first and second positions; and

means for aligning the workpiece based on the position of the mark detected by said position detecting means,

wherein the first and second detecting conditions are different from each other in one of focus state of an image of the mark, a coherence factor of an illumination optical system for illuminating the mark, numerical aperture of an imaging optical system for imaging the mark, and polarization state of light for illuminating the mark.

28. (New) A method of manufacturing a device, said method comprising steps of:

transferring a pattern to a workpiece using an exposure apparatus as defined in claim 25;

developing the workpiece to which the pattern has been transferred; and

processing the developed workpiece to manufacture the device.

29. (New) A method of manufacturing a device, said method comprising steps of:

transferring a pattern to a workpiece using an exposure apparatus as defined in claim 26;

developing the workpiece to which the pattern has been transferred; and
processing the developed workpiece to manufacture the device.

30. (New) A method of manufacturing a device, said method comprising steps of:
transferring a pattern to a workpiece using an exposure apparatus as defined in
claim 27;

developing the workpiece to which the pattern has been transferred; and
processing the developed workpiece to manufacture the device.